Nebraska Department of Health and Human Services

HEALTH ALERT NETWORK
Update

TO: Nebraska Healthcare Providers. Laboratories, Public Health

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RE: **Summertime Infectious Disease Update: Influenza, Pertussis, West Nile Virus**

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Influenza

CDC has recently reported 17 human infections with an influenza A H3N2 variant (H3N2v) virus in 4 states: Hawaii (1 case), Indiana (5 cases), Ohio (10 cases), and Utah (1 case). The H3N2v virus contains the M gene from the human influenza A pdm09 (2009 H1N1) virus. These 17 new cases are in addition to the previous 12 cases detected between August and December 2011. These viruses are largely confined to pigs and do not usually infect humans and are distinctly different from the human seasonal H3N2 virus which was the predominant circulating strain during the 2011-12 influenza season.

About half of the infections with H3N2v occurred after contact with pigs; the remainder occurred in contacts of persons with immediate pig exposure, and was not sustained beyond one or two generations. People infected with variant viruses report symptoms similar to classic seasonal influenza, including fever, cough, lethargy, and lack of appetite. Some have also reported runny nose, sore throat, eye irritation, nausea, vomiting and diarrhea. This virus is related to human H3N2 flu viruses from the 1990s, such that persons exposed during the 90s should have some immunity. Children who were born in the past 12 years most likely lack immunity. To date, most cases of H3N2v have occurred in children.

Please consider influenza as a diagnosis in patients who are seen with influenza-like illness and have had recent exposure to swine, and obtain a rapid flu test. For patients testing positive or otherwise strongly suspected of having influenza, please contact your local health department (LHD), http://dhhs.ne.gov/publichealth/Pages/puh_oph_lhd.aspx, to arrange for collection/submission of a specimen to the Nebraska Public Health Laboratory (NPHL) for confirmatory testing. The test requisition can be found here: http://dhhs.ne.gov/publichealth/Documents/flunphltestrequisition.pdf. Both the collection of a high-quality nasopharyngeal swab and the training/skills of the test operator are critical to optimizing the sensitivity/specificity of these tests. Note that the sensitivity of rapid tests

can range from 10 % to 70%. A video demonstrating the collection of a nasopharyngeal swab is available at:
http://www.youtube.com/watch?v=zqX56LGItgQ&feature=youtube,

along with written guidance on the collection procedure here:
http://dhhs.ne.gov/publichealth/Documents/SpecimenCollectionRequirements.pdf.

Providers across the state should be receiving influenza vaccine for the 2012-13 season except for providers participating in the VFC program, who will receive flu vaccine during September. CDC recommends that persons aged 6 months and older get vaccinated against influenza as soon as 2012-2013 flu vaccine becomes available. **Please note that this 2012-13 seasonal influenza vaccine is unlikely to protect against the H3N2v virus described above.**

Influenza seasons are unpredictable, and can begin as early as October. It takes about two weeks after vaccination for antibodies to develop. Flu vaccine is produced by private manufacturers; availability depends on manufacturing/production schedules. Currently shipments are expected to begin in August and continue throughout September and October.

On February 23, 2012 the WHO recommended that the Northern Hemisphere's 2012-2013 seasonal influenza vaccine be made from the following three vaccine viruses:

- an A/California/7/2009 (H1N1)pdm09-like virus;
- an A/Victoria/361/2011 (H3N2)-like virus;
- a B/Wisconsin/1/2010-like virus (from the B/Yamagata lineage of viruses).

While the H1N1 virus used to make the 2012-2013 flu vaccine is the same virus that was included in the 2011-2012 vaccine, the recommended influenza H3N2 and B vaccine viruses are different from those in the 2011-2012 influenza vaccine for the Northern Hemisphere.

Pertussis

Pertussis is increasing both nationally and in Nebraska. Recently Washington State reported a major spike in reported pertussis cases (>3000 cases). Closer to home, Iowa is experiencing a large outbreak (>800 cases) this year. In Nebraska, there were 21 reports of pertussis reported from January through April, 2012. Since then, we have had a significant uptick in cases, with 15 reports in May, 27 in June and 35 in July. Clinicians should suspect pertussis in patients with undiagnosed cough illness, and test accordingly. The preferred test is a nasopharyngeal swab for PCR. LHDs will be assessing all reported cases of pertussis to identify clusters and to assure appropriate prophylaxis and vaccination.

While the age group most frequently reported with pertussis is less than 1 year of age, these infants are usually exposed/infected by older siblings and parents. CDC recommends a booster dose of Tdap to pregnant women and others who have not previously received Tdap if they anticipate contact with infants less than 12 months of age. For pregnant women, the booster dose should be given after 20 weeks gestation,

preferably in the third trimester. For others, it should be given at least 2 weeks before anticipated contact. This approach protects newborns, who are at highest risk of complications and death, by maternal antibody transfer and the "cocoon" effect where all persons surrounding the newborn/infant are immune to pertussis, (**http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6041a4.htm?s_cid=mm6041a4_e%0d%0a**).

West Nile Virus (WNV)

As of this report, there are six (6) lab-confirmed human cases of WNV, one each in Boone, Butler, Hamilton and Madison counties and 2 in Scottsbluff County. Multiple counties show positive mosquito pools or infected birds (see maps, http://dhhs.ne.gov/publichealth/Pages/wnvData2012.aspx). Most persons (approximately 80%) who become infected with West Nile virus (WNV) develop no clinical illness or symptoms. The incubation period for WNV infection ranges from about 2 to 14 days. Symptoms include but are not limited to: fever, headache, fatigue, skin rash on the trunk of the body, swollen lymph glands, and eye pain. At the time of symptom onset, the viremia has usually resolved and the patient is seropositive for IgM antibodies. Persons who recover from WNV are believed to have permanent immunity to WNV infection, and cannot be reinfected. However, such immunity might wane over time, particularly in the immunocompromised.

WNV Test Interpretation Guidelines

- Patients testing (+) for both IgM and IgG antibodies on an initial ("acute") specimen need a "convalescent" serum (collected at least 14 days following the initial specimen).
- Stable antibody titers on acute and convalescent specimens suggest infection in the distant past. Rising IgM and IgG titers between the acute and the convalescent specimens are consistent with acute infection.
- Testing (+) for IgM and (-) for IgG in an acute specimen is consistent with acute WNV infection.
- Testing (+) for IgG and (-) for IgM is consistent with infection in the distant past.
- CSF which tests (+) for IgM is consistent with acute meningitis/encephalitis.

Tests	Results	Interpretation
IgM IgG	negative negative	Antibody not detected = not a case of WNV
IgM IgG	negative positive	Infection at undetermined time = past infection
IgM IgG	positive negative	Evidence of recent or current infection
IgM IgG	positive positive	Evidence of recent or current infection*; further testing necessary‡
IgM IgG	indeterminate negative	Inconclusive ‡request convalescent serum

*Note that some individuals may have persisting antibodies from the previous WNV season; ‡ Paired acute and convalescent serum samples may be useful for demonstration of seroconversion